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| 09/867,046      | 05/29/2001  | Nathanael Hill       | ER-090-US-01        | 6093             |

7590 10/28/2003

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EXAMINER

HORTON, YVONNE MICHELE

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

3635

DATE MAILED: 10/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.  
09/867,046

Applicant(s)  
NATHANAEL HILL

Examiner  
YVONNE M. HORTON

Art Unit  
3635



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Sep 11, 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-12, 27-37, 44-46, 48, and 50 is/are allowed.
- 6) ☒ Claim(s) 13-26, 38-43, 47, 49, 51, and 52 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

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**DETAILED ACTION**

***Response to Amendment***

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

***Withdrawal/Correction of Previously***

***Indicated Allowable Subject Matter***

2. It appears that there was some confusion or possible error in the previous Official Action dated 7/11/03. For clarity, the indicated allowableness of claims 39-43, 49 and 51 is withdrawn in view of the reference(s) to LIU et al. Rejections to claims 39-43, 49 and 51 were provided in the previous Official Action dated 7/11/03 and are maintained below. Claim 50 should have been indicated as being allowable in the previous Official Action, but was not, and is herein corrected in being indicated as being allowable.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 13-26, 38-43, 49, 51 and 52 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims appear to be directed to a thermal barrier including three elements - a channel, a modified surface, and a layer of metal. Whereas, it is apparent that the "modified surface" is a result of a plasma containing metal being deposited on the channel. Hence, there are, in

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actuality, two elements of the thermal barrier - the channel and the metal which results in a modified surface. Perhaps, for clarity of the claimed invention, the claims should be amended to read --a channel comprising a layer of metal...from a plasma resulting in a modified surface...--.

Clarification and correction is required.

***Claim Rejections - 35 USC § 102***

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 49 and 51 stand rejected under 35 U.S.C. 102(b) as being anticipated by US Patent #6,403,465 to LIU et al. LIU et al. discloses a thermal barrier including a channel (150) disposed between a first and a second component (110) and having a layer of metal (130) bonded in the channel after being deposited from a plasma (IMP), and an adhesive composition (120) disposed in the channel (190); wherein the first and second structural components are bonded together.

***Claim Rejections - 35 USC § 103***

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 39-43 stand rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent #6,403,465 to LIU et al. LIU et al. discloses a thermal barrier including a channel (150) having a layer of metal (130) bonded in the channel after being deposited from a plasma (IMP), and an adhesive composition (120) disposed in the channel (190). LIU et al discloses the basic claimed thermal barrier except for explicitly detailing the amount of adhesive shrinkage and

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shear strength. Although LIU et al. is silent in this regard, it would have been an obvious matter of design choice to select a known material on the basis of its suitability for the use intended.

The applicant's details several different metals used in his thermal barrier. Thus, there does not appear to be any criticality in the type of metal used to form the barrier. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made that the selection of the type of adhesive would depend greatly on the kind of metal used to form the barrier. Hence, the selection of the desired amount of shrinkage and shear strength would also vary depending upon the kind of metal used.

***Allowable Subject Matter***

9. Claims 1-12,27-37,44-46,48 and 50 allowed.
10. Claims 13 and 38 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.
11. Claims 14-<sup>26</sup>~~37~~,47 and 52 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.
12. The claims remain as being allowed for the reasons set fourth in the previous Office Action dated 1/14/03.

***Response to Arguments***

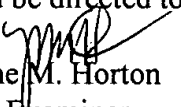
13. Applicant's arguments filed 9/11/03 have been fully considered but they are not persuasive.

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In regards to the applicant's argument that LIU et al. merely teaches the prevention of copper diffusion, this is partially so. However, the prevention of copper diffusion is considered under thermal conditions ranging from temperatures between 20 to 450 degrees Celsius. Hence, the prevention of copper diffusion is heavily influenced by the temperature and how the copper forms a thermal "barrier", column 6, line 10-15, in response to the involved temperature.

Yes, LIU et al. is directed to "thermal barriers" in integrated circuits; however, LIU et al., for purposes of illustration, directs his disclosure to a single damascene trench (a channel) possibly of many, but clear to at least one. Although the disclosure of LIU et al. is not directed to window casings, it is directed to providing a thermal barrier assembly including a channel, as identified in the instant claims.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yvonne M. Horton whose telephone number is (703) 308-1909.

  
Yvonne M. Horton  
Patent Examiner  
Art Unit 3635  
October 23, 2003